WHAT IS CLAIMED IS:

1. A compression bonding method in which an element, which is formed of a material having a transparency with respect to at least a portion of the light spectrum, is bonded to a substrate, the method comprising:

forming a layer having metal on at least a part of a surface of the substrate;

disposing the element on the layer; and

bonding the element to the layer by applying pressure on the element toward the layer and irradiating light to which the element is transparent, on a bonding area between the element and the layer.

2. The method of claim 1, wherein the element is formed of silica glass.

3. The method of claim 1, wherein the substrate is a silicon substrate.

4. The method of claim 1, wherein the light is irradiated on the bonding area for a predetermined time after the application of pressure.

5. The method of claim 1, wherein the light provides activating energy which allows an interaction between the layer and the element approximately at room temperature.

6. The method of claim 5, wherein the light has a wavelength of not less than approximately 180 nm.

7. The method of claim 1, wherein the pressure, which acts at an interface between the layer and the element, ruptures a native oxide film on the layer and allows the element to contact a non-oxidized element of the layer.

8. The method of claim 1, wherein the layer is a continuous layer.

9. The method of claim 8, wherein a cross section of the element is round.

10. The method of claim 8, wherein the element is an optical element that is one of a lens, an optical fiber, and a prism.

11. The method of claim 1, wherein the layer is a discontinuous layer.

12. The method of claim 11, wherein the layer is formed as strips or dots.

13. The method of claim 11, wherein a surface of the element which contacts the layer is substantially flat.

14. A compression bonding apparatus which bonds an element, which is formed of a material having transparency with respect to at least a portion of the light spectrum, to a substrate, the apparatus comprising:

a holder having a predetermined inner space;

a pressurizing plate which is installed at a bottom of the holder in order to apply pressure on the element toward the substrate and is formed of a material having a transparency with respect to the at least a portion the light spectrum;

a light lamp which is installed in the inner space of the holder and emits light in the at least a portion of the light spectrum; and

a collimating lens which is installed in the inner space of the holder to be positioned between the light lamp and the pressurizing plate and collimates at least a portion of the light emitted from the light lamp.

15. The apparatus of claim 14, wherein the pressurizing plate is formed of synthetic silica.

16. The apparatus of claim 14, wherein the light lamp is a deuterium lamp.

17. A compression bonding method in which an element, which is formed of a material having a transparency with respect to at least a portion of the light spectrum is bonded to a substrate, the method comprising:

forming a layer having metal, on at least a part of a surface of the substrate;

disposing the element on the layer;

applying pressure on the element toward the layer; and

irradiating light to which the element is transparent, through the element to a bonding area between the element and the layer.

18. The method of claim 17, wherein the light provides activating energy which allows an interaction between the layer and the element, approximately at room temperature.

19. A compression bonding apparatus which bonds an element, which is formed of a material having transparency with respect to at least a portion of the light spectrum to a substrate, the apparatus comprising:

means for applying pressure on the element toward the substrate and having a transparency with respect to the light;

a light emitting device emitting light in the at least a portion of the light spectrum toward the element; and

a collimating lens disposed between the light emitting device and the element, wherein a portion of the element, a portion of the substrate, a portion of the means for applying pressure, the collimating lens, and the light emitting device are substantially disposed along an optical path of the light.

20. The apparatus of claim 19, wherein the substrate, the element, the means for applying pressure, the collimating lens, and the light emitting device are disposed in aforementioned order.

21. The method of claim 1, wherein the light is substantially in the UV wavelength range.

22. The apparatus of claim 14, wherein the light is substantially in the UV wavelength range.

23. The method of claim 17, wherein the light is substantially in the UV wavelength range.

24. The apparatus of claim 19, wherein the light is substantially in the UV wavelength range.

25. The method of claim 1, wherein the metal includes aluminum.

26. The method of claim 7, wherein the non-oxidized element is aluminum.

27. The method of claim 17, wherein the metal includes aluminum.